

IN THE CLAIMS:

Claims 9-10 and 19 have been canceled.

Please cancel claims 2, 16, 19-21, 41,, 45, and 46 without prejudice.

Please amend claim 15 as follows:

1. (Previously presented) A thermally enhanced fluid composition, comprising:
an effective amount of a selected neat fluid having a selected thermal conductivity;
an effective amount of from 0.001 to 10 percent by weight of a selected carbon nanomaterial having an aspect ratio of from 500 to 5000 dispersed into said selected neat fluid, said selected carbon nanomaterial having a thermal conductivity greater than the thermal conductivity of said selected neat fluid in which the carbon nanomaterial is dispersed; and
an effective amount of at least one chemical dispersing agent having a low hydrophile-lipophile balance (HLB) value of 8 or less.
2. (Cancel)
3. (Previously presented) The thermally enhanced composition of Claim 1 wherein said carbon nanotube is surface treated to be hydrophilic at surface for ease of dispersing into the aqueous medium.
4. (Previously presented) The thermally enhanced composition of Claim 1 wherein the said dispersing agent is soluble in the said neat fluid.
5. (Previously presented) The thermally enhanced composition of Claim 1 wherein said neat fluid is selected from the group consisting of a petroleum distillate and a synthetic petroleum oil.
6. (Previously presented) The thermally enhanced composition of claim 1, wherein said chemical dispersing agent is a surfactant.

7. (Previously presented) The thermally enhanced composition of claim 6, wherein said surfactant is selected from the group consisting of a ionic surfactant and a mixture of a nonionic and ionic surfactant.

8. (Previously presented) The thermally enhanced composition of claim 1, wherein said dispersing agent is a dispersant-detergent (DI) additive package.

9. (Cancel)

10. (Cancel)

11. (Previously presented) The thermally enhanced composition of claim 1 wherein said neat fluid is a uniform dispersion in a form as a gel or paste.

12. (Previously presented) The thermally enhanced composition of claim 1, wherein said neat fluid is a grease.

13. (Previously presented) The composition of claim 1, wherein said carbon nanomaterial comprises carbon nanotubes and graphite nanoparticles.

14 . (Previously presented) The thermally enhanced composition of claim 1, wherein said carbon nanomaterial is selected from the group consisting of carbon nanotubes, graphite nanoparticles, and combinations thereof.

15. (Currently amended) ~~The thermally enhanced fluid composition of claim 1, wherein~~
A thermally enhanced fluid composition, comprising:
an effective amount of a selected neat fluid having a selected thermal conductivity;
an effective amount of a selected carbon nanomaterial having a selected thermal conductivity to
~~obtain the desired thermal enhancement~~ is up to 20 percent by weight having an aspect ratio of from

500 to 5000 dispersed into said selected neat fluid, said selected carbon nanomaterial having a thermal conductivity greater than the thermal conductivity of said selected neat fluid in which the carbon nanomaterial is dispersed; and

an effective amount of at least one chemical dispersing agent having a low hydrophile-lipophile balance (HLB) value of 8 or less.

16. (Cancel)

17. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein an effective amount of a selected carbon nanomaterial to obtain the desired thermal enhancement is from 0.01 to 5 percent by weight.

18. (Previously presented) The thermally enhanced fluid composition of claim 1, including a selected amount of oil.

19. (cancel)

20. (Cancel

21. (Cancel)

22. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said effective amount of a selected carbon nanomaterial is from 0.001 to 2.0 percent by weight.

23. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said selected carbon nanomaterial has a thermal conductivity exceeding 80W/m-K.

24. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said selected carbon nanomaterial has a thermal conductivity exceeding that of said selected neat fluid.

25. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid comprises a petroleum liquid medium selected from the group consisting of a petroleum distillate, a synthetic petroleum oil, a grease, a gel, a oil-soluble polymer composition, and combinations thereof.

26. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group consisting of Group I (solvent refined mineral oils), Group II (hydrocracked mineral oils), Group III (severely hydrocracked hydrogenated oils), Group IV (polyalphaolefins), Group VI (esters, naphthenes, and polyalkylglycols), and combinations thereof.

27. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group of synthetic hydrocarbon oils, halo-substituted hydrocarbon oils, polymerized and interpolymerized olefins, polybutylenes, polypropylenes, propylene-isobutylene copolymers, chlorinated polybutylenes, poly(1-octenes), poly(1-decenes), alkylbenzenes, dodecylbenzenes, tetradecylbenzenes, dinonylbenzenes, di-(2-ethylhexyl)benzenes, polyphenyls, biphenyls, terphenyls, alkylated polyphenyls, alkylated diphenyl, ethers, alkylated diphenyl sulfides, and combinations thereof.

28. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group consisting of the esters of dicarboxylic acids selected from the group consisting of phthalic acid, succinic acid, alkyl succinic acids and alkenyl succinic acids, maleic acid, azelaic acid, suberic acid, sebacic acid, fumaric acid, adipic acid, alkenyl malonic acids, with an alcohols selected from the group consisting of butyl alcohol, hexyl alcohol, dodecyl alcohol, 2-ethylhexyl alcohol, ethylene glycol diethylene glycol monoether, propylene glycol, dibutyl adipate, di(2-ethylhexyl) sebacate, di-hexyl fumarate, dioctyl sebacate, diisooctyl azelate, diisodecyl azealate, dioctyl phthalate, didecyl phthalate, dicicosyl sebacate, the 2-ethylhexyl diester of linoleic acid dimer, the complex ester formed by reacting one mole of sebacic acid with two moles of tetraethylene glycol and two moles of 2-ethylhexanoic acid, and combinations thereof.

29. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group consisting of esters made from C₅ to C₁₂ monocarboxylic acids and polyols and polyol ethers such as neopentyl glycol, trimethylolpropane, pentaerythritol, dipentaerythritol, tripentaerythritol, and combinations thereof.

30. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from a polyalphaolefins having a viscosity of up to 100 centistoke at 100°C.

31. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group of synthetic based oil ester additives consisting of polyolesters, diesters, di-aliphatic diesters of alkyl carboxylic acids, di-2-ethylhexylazelate, di-isodecyladipate, di-tridecyladipate, and combinations thereof.

32. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the group of diesters consisting of an aliphatic diester of a dicarboxylic acid, a dialkyl aliphatic diester of an alkyl dicarboxylic acid, a di-2-ethyl hexyl azelate, a di-isodecyl azelate, a di-tridecyl azelate, a di-isodecyl adipate, a di-tridecyl adipate, and combinations thereof.

33. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from a hydrogenated oil having a sulfur level less than 0.03 with saturates greater than or equal to 90 and a viscosity index of greater than or equal to 120.

34. (Preciously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is a hydrogenated oil having a viscosity of from 2 to 60 CST at 100 degrees centigrade.

35. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is a hydrogenated oil present in an amount of up to 99 percent by volume.

36. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said

neat fluid is selected from the water-based group consisting of an alcohol and its derivatives.

37. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said neat fluid is selected from the water-based group consisting of an ethylene glycol, a propylene glycol, a methyl alcohol, an ethyl alcohol, a propyl alcohol, an isopropyl alcohol, and combinations thereof.

38. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said dispersants are selected from the group consisting of an lipophilic hydrocarbon group, and a polar functional hydrophilic group.

39. (Previously presented) The thermally enhanced fluid composition of claim 38, wherein said polar functional hydrophilic group is selected from the class of carboxylate, ester, amine, amide, imine, imide, hydroxyl, ether, epoxide, phosphorus, ester carboxyl, anhydride, or nitrile.

40. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein said dispersant is an ashless dispersant typically used in the petroleum industry selected from the group consisting of N-substituted polyisobutenyl succinimides and succinates, alkyl methacrylate-vinyl pyrrolidinone copolymers, alkyl methacrylate-dialkylaminoethyl methacrylate copolymers, alkylmethacrylate-polyethylene glycol methacrylate copolymers, and polystearamides.

41. (Cancel)

42. (Previously presented) The thermally enhanced fluid composition of claim 1, wherein an effective amount of said dispersant present in an amount of from 0.001 to 30 percent by weight.

43. (Previously amended) The thermally enhanced fluid composition of claim 1, wherein an effective amount of said dispersant present in an amount of from between 0.5 percent to 20 percent weight.

44. (Previously amended) The thermally enhanced fluid composition of claim 1, wherein an effective amount of said dispersant present in an amount of from between 2 to 6 weight percent by weight.

45. (Cancel)

46. (Cancel)

47. (Previously presented) The thermally enhanced fluid composition of claim 1, including an effective amount of a viscosity improver selected from the group consisting of an olefin copolymers (OCP), a polymethacrylates (PMA), a hydrogenated styrene-diene (STD), a styrene-polyester (STPE) polymers, and an olefin copolymer.

48. (Previously amended) The thermally enhanced fluid composition of claim 1, including an effective amount of at least one pour point depressant selected from the group consisting of an alkylnaphthalene, an acrylic copolymer, a polymethacrylate, a polyfumarates, a styrene ester, an oligomerized alkylphenol, a phthalic acid ester, an ethylenevinyl acetate copolymer, and other mixed hydrocarbon polymers.

49. (Previously presented) The thermally enhanced fluid composition of claim 1, including an effective amount of a rust and oxidation inhibitor.

50. (Previously presented) The thermally enhanced fluid composition of claim 1, including an effective amount of a demulsifier.

51. (Previously presented) The thermally enhanced fluid composition of claim 1, including an effective amount of a foam inhibitor.

52. (Previously presented) The thermally enhanced fluid composition of claim 1, including an

effective amount of a seal swelling agent.

53. (Previously presented) A method of thermally enhancing the conductivity of a fluid composition, comprising the steps of:
selecting a neat fluid having a selected thermal conductivity;
selecting a carbon nanomaterial having an aspect ratio of from 500 to 5000 in an effective amount of from 0.001 to 10 percent by weight;
dispersing said selected carbon nanomaterial having a thermal conductivity greater than the thermal conductivity of said selected neat fluid in which the carbon nanomaterial is dispersed into said neat fluid; and
adding at least one chemical dispersing agent having a low hydrophile-lipophile balance (HLB) value of 8 or less thereto forming a thermally enhanced fluid.

54. (Previously presented) The method of claim 53, including the step of shearing said thermally enhanced fluid containing dispersed nanomaterial.

55. (Previously presented) The method of claim 54, wherein said shearing step is selected from the group of processing methods consisting of creating a turbulent flow through a nozzle, creating a turbulent flow thorough a high pressure fuel injector, an ultrasonic device, and combinations thereof to achieve a stable viscosity.

56. (Previously presented) A method of thermally enhancing the conductivity of a fluid composition, comprising the steps of:
selecting a neat fluid having a selected thermal conductivity;
selecting a carbon nanomaterial having an aspect ratio of from 500 to 5000 in an effective amount of from 0.001 to 10 percent by weight;
selecting at least one chemical dispersing agent having a low hydrophile-lipophile balance (HLB) value of 8 or less;
dissolving said at least one chemical dispersing agent into said neat fluid forming a liquid

medium dispersing fluid;

adding said carbon nanomaterial into said liquid medium dispersing fluid while being agitated or ultrasonicated. forming a thermally enhanced fluid composition.

57. (Previously presented) The method of thermally enhancing the conductivity of a fluid composition of claim 56, including the step of further shearing said thermally enhanced fluid composition containing nanomaterial.

58. (Previously presented) The method of claim 57, wherein said shearing step is selected from the group of processing methods consisting of creating a turbulent flow through a nozzle, creating a turbulent flow thorough a high pressure fuel injector, an ultrasonic device, and combinations thereof to achieve a stable viscosity.

59. (Previously presented) A method of thermally enhancing the conductivity of a fluid composition, comprising the steps of:
selecting a neat fluid having a selected thermal conductivity;
selecting a carbon nanomaterial having an aspect ratio of from 500 to 5000 in an effective amount of from 0.001 to 10 percent by weight;
selecting at least one chemical dispersing agent having a low hydrophile-lipophile balance (HLB) value of 8 or less;
dissolving said carbon nanomaterial into said neat fluid forming a liquid medium;
adding said chemical dispersing agent into said liquid medium simultaneously while being agitated or ultrasonicated.

60. (Previously presented) The method of thermally enhancing the conductivity of a fluid composition of claim 59, including the step of further shearing said thermally enhanced fluid composition containing nanomaterial.

61. (Previously presented) The method of claim 60, wherein said shearing step is selected

from the group consisting of creating a turbulent flow through a nozzle, creating a turbulent flow thorough a high pressure fuel injector, an ultrasonic device, and combinations thereof to achieve a stable viscosity.